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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/192,651	11/16/1998	TIMOTHY W. FUEHRER	2-9-24-11	1068

7590 11/06/2002

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EXAMINER	
SINGH, RAMNANDAN P	
ART UNIT	PAPER NUMBER
2644	

DATE MAILED: 11/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/192,651	Applicant(s) FUEHRER ET AL.	
	Examiner Dr. Ramnandan Singh	Art Unit 2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 August 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Arguments

In view of the finding of new art, the final rejection is withdrawn, and prosecution is reopened, as new grounds of rejections are applied.

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-7, 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hershbarger et al [US 5,654,984] in view of Luscher, Jr. [US 5,600,551].

Regarding claims 1 and 7, Hershbarger et al teaches a method and an interface circuit comprising a DSP, as shown in Fig. 10, for use with a high voltage isolation interface 1005, wherein the high voltage isolation interface is also called a data access arrangement (DAA) in the art. The DSP subsystem comprises sigma delta conversion and digital filtering block 1001 and additional DSP circuitry block 1002, wherein the digital filtering block further comprises a clock generator 1009 coupled through serial block 1036 to the high voltage interface block 1005 providing operating power to the DAA [Figs. 2-4, 6(A), 6(B), 9, 10; col. 14, line 45 to col. 15, line 48]. Further, Fig. 7(A) illustrates an embodiment of the invention comprising crystal

oscillator 702, charge pump 704 and clock generator 705 , wherein the DSP subsystem may be used with the system illustrated in Figs. 7(A), 7(B), 7(C), 7(D) [col. 15, line 49 to col. 16, line 28].

Although Hershbarger et al teaches a charge pump which is basically used to obtain an output voltage that is greater than an input voltage; he does not teach expressly the charge pump for doubling the voltage of a clock signal.

Luscher, Jr. teaches a charge pump for doubling the voltage of a clock signal for use with a capacitive isolation barrier [Fig. 1; col. 1, lines 30-37; Fig. 7; col. 6, line 32 to col. 10, line 48; col. 1, lines 52-67; col. 2, lines 1-52; Fig. 10].

Hershbarger et al and Luscher, Jr. are analogous art because they are from a similar problem solving area, viz., using a charge pump with a DAA system.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the voltage doubler of Luscher, Jr. with Hershbarger et al to provide a voltage that is an order or higher orders of magnitude than a supply voltage [Luscher, Jr. col. 1, lines 15-18] to transmit more power from the powered side of the DAA to the phone line side of the isolation barrier through the barrier capacitors [Luscher, Jr. col. 10, lines 33-48].

Regarding claims 2 and 15, Luscher, Jr. teaches the charge pump, as shown in Fig. 7, comprising a first capacitive element C1 having an input side connected the DSP having a driver and an output side to the DAA, wherein capacitors C1, C2, and C2 function as isolating elements; a second capacitive element C4 having an input and an output connected each connected to the DAA; and a rectifying element diode D2 doubling the voltage of the clock [col. 6, lines 24-30].

Regarding claims 3 and 4, Luscher, Jr. teaches the charge pump as shown in Fig. 7 with square-wave pulses having opposite polarity 10a, 10b; and a diode rectifier D2.

Regarding claim 5, Hershbarger et al teaches a clock generation circuit 705 to operate the charge pump 704 [Fig. 7].

Regarding claim 6, Luscher, Jr. teaches the charge pump, as shown in Fig. 7, with a storage capacitor C4 [col. 6, lines 58-62; col. 7, lines 13-37; col. 8, lines 4-14].

Regarding claim 14, Hershbarger et al teaches a differential communication using a differential conversion circuit comprising capacitors 743 and 744 [col. 12, lines 65-67; col. 13, lines 1-15; col. 13, lines 50-67].

Regarding claim 16, Hershbarger et al does not teach specific values of the capacitors but he emphasizes on using small capacitors on the order of picofarads to provide a high voltage isolation barrier [col. 2, lines 44-48; col. 2, lines 55-56; col. 2, lines 64-67; col. 3, lines 18-22].

3. Claims 8-13, 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hein et al [US 6,198,816 B1] in view of Luscher, Jr. [US 5,600,551].

Regarding claim 8, Hein et al teaches driver circuits, shown in Fig. 6A, 6B, for communications across an isolation barrier in a DAA system.

In addition, Hein et al teaches a charge pump 532 to obtain an output voltage that is greater than an input voltage but he does not teach expressly the charge pump for doubling the voltage of a clock signal.

Luscher, Jr. teaches a charge pump doubling the voltage of a clock signal for use with a capacitive isolation barrier having capacitors C1, C2 and C3 as voltage isolators [col. 9, 61-63]; wherein the charge pump operation based on charging and discharging of the capacitors C1, C2, C3 and C4 with drivers is provided [Fig. 1; col. 1, lines 30-37; Fig. 7; col. 6, line 32 to col. 10, line 48; col. 1, lines 52-67; col. 2, lines 1-52; Fig. 10].

Hein et al and Luscher, Jr. are analogous art because they are from a similar problem solving area, viz., using a charge pump with a DAA system.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the voltage doubler of Luscher, Jr. with the driver circuits of the Hein system to provide a voltage that is an order or higher orders of magnitude than a supply voltage [Luscher, Jr. col. 1, lines 15-18] to transmit more power from the powered side of the DAA to the phone line side of the isolation barrier through the barrier capacitors [Luscher, Jr. col. 10, lines 33-48].

Regarding claims 9 and 18, Luscher, Jr. teaches the charge pump as shown in Fig. 7 with comprising a first capacitive element C1 having an input side connected the DSP having a driver and an output side to the DAA, wherein capacitors C1, C2, and C2 function as isolating elements; a second capacitive element C4 having an input and an output connected each connected to the DAA; and a rectifying element diode D2 doubling the voltage of the clock [col. 6, lines 24-30].

Regarding claims 10 and 11, Luscher, Jr. teaches the charge pump as shown in Fig. 7 with square-wave pulses having opposite polarity 10a, 10b; and a diode rectifier D2.

Regarding claim 12, Hein et al teaches a clock recovery 707 to generate a clock pulse for use by the DAA which is essentially identical to the clock output by the clock oscillator 704 [Fig. 7].

Regarding claim 13, Luscher, Jr. teaches the charge pump, as shown in Fig. 7, with a storage capacitor C4 [col. 6, lines 58-62; col. 7, lines 13-37; col. 8, lines 4-14].

Regarding claim 17, Hein et al teaches differential communication across the isolation barrier (DAA)), wherein Fig. 6B shows a driver for this communication [col. 13, lines 65-67; col. 14, lines 1-8; col. 15, lines 1-19].

Regarding claim 19, Hein et al teaches using capacitors on the order of 100 pF in the preferred embodiment [col. 12, lines 51-58].

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Cernea [US 5,436,587] demonstrates a charge pump circuit comprising a plurality of voltage doubler circuits [Figs. 3-6; col. 3, lines 25-56; col. 4, line 26 to col. 5, line 64; col. 6, line 33 to col. 7, line 41].

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Ramnandan Singh whose telephone number is (703)308-6270. The examiner can normally be reached on M-F(8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester Isen can be reached on (703)-305-4386. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9314 for regular communications and (703)872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)306-0377.

Dr. Ramnandan Singh
Examiner
Art Unit 2644

October 31, 2002

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SUPERVISORY PATENT EXAMINER
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